SCOPE & DEFINITIONS

This chapter contains criteria to ensure that solid wastes are identified, classified, collected, transported, stored, treated and disposed of safely and in a manner protective of human health and the environment. These criteria apply to residential and commercial solid waste generated at the installation level. These criteria are part of integrated waste management. Policies concerning the recycling portion of integrated waste management are found in DoDI 4715.4 (Pollution Prevention) and service solid waste management manuals. The criteria in this chapter deal with general solid waste. Criteria for specific types of solid waste that require special precautions are located in Chapter 6 (Hazardous Waste), Chapter 8 (Medical Waste), Chapter 14 (PCBs), and Chapter 11 (Pesticides).

Bulky Waste – Large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes whose large size precludes or complicates their handling by normal solid wastes collection, processing, or disposal methods.

Carry-out Collection – Collection of solid waste from a storage area proximate to the dwelling unit(s) or establishment where generated.

Collection – The act of consolidating solid wastes (or materials which have been separated for the purpose of recycling) from various locations.

Collection Frequency – The number of times collection is provided in a given period of time.

Commercial Solid Waste – All types of solid wastes generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities, excluding residential and industrial wastes.

Compactor Collection Vehicle – A vehicle with an enclosed body containing mechanical devices that conveys solid waste into the main compartment of the body and compresses it into a smaller volume of greater density.

Construction and Demolition Waste – The waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures.

Curb Collection – Collection of solid waste placed adjacent to a street.

Cover Material – Material that is used to cover compacted solid wastes in a land disposal site.

Daily Cover – Soil that is spread and compacted or synthetic material that is placed on the top and side slopes of compacted solid waste at least at the end of each operating day in order to control vectors, fire, moisture, and erosion and to assure an aesthetic appearance. Mature compost or other natural material may be substituted for soil if soil is not reasonably available in the vicinity of the landfill and the substituted material will control vectors, fire, moisture, and erosion and will assure an aesthetic appearance.

Final Cover – A layer of soil, mature compost, other natural material (or synthetic material with an equivalent minimum permeability) that is applied to the landfill after completion of a cell or trench, including a layer of material that will sustain native vegetation, if any.

Food Waste – The organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods, commonly called garbage.

Generation – The act or process of producing solid waste.

Hazardous Wastes – See Chapter 6 (Hazardous Waste).

Industrial Solid Waste – The solid waste generated by industrial processes and manufacturing.

Institutional Solid Waste – Solid waste generated by educational, health care, correctional, and other institutional facilities.

Land Application Unit – An area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment of disposal.

Lower Explosive Limit – The lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25°C and atmospheric pressure.

Municipal Waste (also referred to as Urban Waste) – Any waste produced in housing or commercial units, offices, and services, and any other waste classified as non-hazardous that may be comparable to waste produced by those activities. Municipal waste also includes waste from cleaning operations of public roads, green areas, recreational areas and beaches, as well as furniture, goods, and abandoned vehicles.

Municipal Solid Waste Landfill Unit (MSWLF) – A discrete area of land or an excavation, on or off the installation, that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile. A MSWLF unit also may receive other types of wastes, such as commercial solid waste and industrial waste.

Open Burning – Burning of solid wastes in the open, such as in an open dump.

Open Dump – A land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, is susceptible to open burning, and is exposed to the elements, vectors, and scavengers.

Packaging – Any product used for holding, protection, handling, distribution, and presentation of goods (from raw materials to finished products) in any phase of the production, distribution, and consumption chain. Disposable packaging is also included. Packaging includes direct sell or primary packaging, collective or secondary packaging, and transportation or tertiary packaging.

Residential Solid Waste – The wastes generated by the normal activities of households, including (but not limited to) food wastes, rubbish, ashes, and bulky wastes.

Rubbish – A general term for solid waste (excluding food wastes and ashes) taken from residences, commercial establishments, and institutions.

Sanitary Landfill – A land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day.

Satellite Vehicle – A small collection vehicle that transfers its load into a larger vehicle operating in conjunction with it.

Scavenging – The uncontrolled and unauthorized removal of materials at any point in the solid waste management system.

Service Solid Waste Management Manual – Navy NAVFAC MO-213 and, Army TM 5-634 or their successor documents, and the applicable Air Force Policy.

Sludge – The accumulated semi-liquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins. It does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial wastewater effluent, dissolved materials in irrigation return flows, or other common water pollutants.

Solid Wastes – Garbage, refuse, sludge, and other discarded materials, including solid, semi-solid, liquid, and contained gaseous materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial wastewater effluent, dissolved materials in irrigation return flows, or other common water pollutants.

Solid Waste Storage Container – A receptacle used for the temporary storage of solid waste while awaiting collection.

Stationary Compactor – A powered machine which is designed to compact solid waste or recyclable materials, and which remains stationary when in operation.

Storage (of Solid Waste) – The interim containment of solid waste after generation and prior to collection for ultimate recovery or disposal.

Street Wastes – Material picked up by manual or mechanical sweepings of alleys, streets, and sidewalks; wastes from public waste receptacles; and material removed from catch basins.

Transfer Station – A site at which solid wastes are concentrated for transport to a processing facility or land disposal site. A transfer station may be fixed or mobile.

Treated Sludge – Sludge that has undergone biological, chemical, or thermal treatment (long-time storage or another suitable procedure) to minimize its fermenting potential and health risks. This includes sludge used in composting processes.

Vector – A carrier that is capable of transmitting a pathogen from one organism to another.

Waste – Any substance or object in the categories listed in the European Waste Catalog which the holder discards, intends to discard, or is required to discard.

Yard Waste – Grass and shrubbery clippings, tree limbs, leaves, and similar organic materials commonly generated in residential yard maintenance (also known as green waste).

CRITERIA

C7.1 DOD SOLID WASTES

DoD solid wastes will be treated, stored, and disposed of in authorized facilities operated by companies enrolled in the National Registry of Waste Management Companies that have been evaluated against C7.12, C7.14, and C7.15. These evaluated facilities will be used to the maximum extent practical.

C7.2 COOPERATION DURING PLANNING

Installations will cooperate with the Spanish Base Commander and Spanish municipal officials, to the extent possible, in the solid waste management planning process.

C7.3 SOLID WASTE MANAGEMENT STRATEGY

Installations will develop and implement a solid waste management strategy to reduce solid waste disposal. The Spanish national and regional waste management plans should be taken into consideration when developing the DoD installation strategy. This strategy could include recycling, composting, and waste minimization efforts. It will also include the means for separate collection of packaging waste, which must be transferred to authorized parties for recycling, re-use, or recovery.

C7.4 STORAGE OF SEPARATED RECYCLABLES

All solid wastes or materials which have been separated for the purpose of recycling will be stored in such a manner that they do not constitute a fire, health, or safety hazard or provide food

or harborage for vectors, and will be contained or bundled so as not to result in spillage. The temporary storage of non-hazardous solid waste will not exceed a period of 2 years.

C7.5 BULKY WASTES

DoD installations that generate waste appliances (e.g., refrigerators, freezers, televisions, washing machines, air conditioners, computers, etc.) should return the waste appliances to their point of purchase if feasible. If not feasible, the waste appliances should be turned over to authorized collection centers (via DRMO). Scrap vehicles/trailers and large vehicle parts will be handled in accordance with Chapter 6.

Temporary storage of bulky wastes will include (but will not be limited to) removing all doors from large household appliances and covering the items to reduce both the problems of an attractive nuisance, and the accumulation of solid waste and water in and around the bulky items. Bulky wastes will be screened for the presence of ozone depleting substances as defined in Chapter 2 or hazardous constituents as defined in Chapter 6. Readily detachable or removable hazardous waste will be segregated and disposed of in accordance with Chapters 6, 14, and 15.

The temporary storage of non-hazardous bulky waste will not exceed a period of 2 years.

C7.6 DESIGN OF STORAGE AREAS

In the design of all buildings or other facilities which are constructed, modified, or leased after the effective date of these guidelines, there will be provisions for storage in accordance with these guidelines which will accommodate the volume of solid waste anticipated. Storage areas will be easily cleaned and maintained, and will allow for safe, efficient collection.

C7.7 STORAGE CONTAINERS

Storage containers should be leak-proof, waterproof, and vermin-proof, including sides, seams, and bottoms and be durable enough to withstand anticipated usage and environmental conditions without rusting, cracking, or deforming in a manner that would impair serviceability. Storage containers should have functional lids.

C7.8 CONTAINER STORAGE SITES

Containers should be stored on a firm, level, well-drained surface which is large enough to accommodate all of the containers and which is maintained in a clean, spillage-free condition.

C7.9 RECYCLING PROGRAMS / POLLUTION PREVENTION

Recycling programs will be instituted on DoD installations in accordance with the policies in DoDI 4715.4 (Pollution Prevention) and the installation's solid waste management strategy (see C7.3). The recycling programs must also include the means for separate collection of packaging waste, which must be transferred to authorized parties for recycling, re-use, or recovery.

C7.10 APPROVAL FOR NEW OR EXPANDED MSWLF

Installations will not initiate new or expand existing waste landfill units without approval of the Combatant Commander with responsibility for the area where the landfill would be located, and only after justification that unique circumstances mandate a new unit. If the approval for the new unit is granted, the installation will submit a permit request and supporting information (including a design document and technical memorandum detailing the characteristics of the landfill) to the Spanish Base Commander to seek an operating permit for the facility. The Spanish Base Commander may submit the permit request to the competent regional authority.

C7.11 DESIGN & OPERATION OF NEW MSWLF

New DoD MSWLF units will be designed and operated in a manner that incorporates the following broad factors:

C7.11.1 Location restrictions in regard to airport safety (i.e., bird hazards), floodplains, wetlands, aquifers, seismic zones, and unstable areas

C7.11.2 Procedures for excluding hazardous waste

C7.11.3 Cover material criteria (e.g., daily cover), disease vector control, explosive gas control, air quality criteria (e.g., no open burning), access requirements, liquids restrictions, and record-keeping requirements

C7.11.4 Inspection program

C7.11.5 Liner and leachate collection system designed consistent with location to prevent groundwater contamination that would adversely affect human health.

C7.11.6 A groundwater monitoring system unless the installation operating the landfill, after consultation with the Environmental Executive Agent, determines that there is no reasonable potential for migration of hazardous constituents from the MSWLF to the uppermost aquifer during the active life of the facility and the post-closure care period.

C7.12 OPERATION OF MSWLF

Installations operating MSWLF units will:

C7.12.1 Use standard sanitary landfill techniques of spreading and compacting solid wastes and placing daily cover over disposed solid waste at the end of each operating day.

C7.12.2 Establish criteria for unacceptable wastes based on site-specific factors such as hydrology, chemical and biological characteristics of the waste, available alternative disposal methods, environmental and health effects, and the safety of personnel.

C7.12.3 Implement a program to detect and prevent the disposal of hazardous wastes, infectious wastes, polychlorinated biphenyl (PCB) wastes, and wastes determined unsuitable for the specific MSWLF.

C7.12.4 Investigate options for composting of MSW as an alternative to landfilling or treatment prior to landfilling.

C7.12.5 Prohibit open burning, except for infrequent burning of agricultural wastes, silvicultural wastes, land-clearing debris, diseased trees, or debris from emergency clean-up operations.

C7.12.6 Develop procedures for dealing with yard waste and construction debris that keeps it out of MSWLF units to the maximum extent possible (e.g., composting, recycling).

C7.12.7 Operate in a manner to protect the health and safety of personnel associated with the operation.

C7.12.8 Maintain conditions that are unfavorable for the harboring, feeding and breeding of disease vectors.

C7.12.9 Ensure that methane gas generated by the MSWLF unit does not exceed 25% of the lower explosive limit for methane in structures on or near the MSWLF.

C7.12.10 Operate in an aesthetically acceptable manner.

C7.12.11 Operate in a manner to protect aquifers.

C7.12.12 Control public access to landfill facilities.

C7.12.13 Prohibit the disposal of bulk or non-containerized liquids if possible.

C7.12.14 Maintain records on the preceding criteria.

C7.13 CLOSURE & POST-CLOSURE

During closure and post-closure operations, installations will:

C7.13.1 Install a final cover system that is designed to minimize infiltration and erosion.

C7.13.2 Ensure that the infiltration layer is comprised of a minimum of 46 cm (18 inches) of earthen material, geotextiles, or combination thereof, that have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than .00005 cm/sec, whichever is less.

C7.13.3 Ensure that the final layer consists of a minimum of 21 cm (8 inches) of earth material

that is capable of sustaining native plant growth.

C7.13.4 If possible, revegetate the final cap with native plants that are compatible with the landfill design, including the liner.

C7.13.5 Prepare a written closure plan that includes, at a minimum, a description of the monitoring and maintenance activities required to ensure the integrity of the final cover, a description of the planned uses of the site during the post-closure period, plans for continuing (during the post-closure period) leachate collection, groundwater monitoring, and methane monitoring, and a survey plot showing the exact site location. The plan will be kept as part of the installation's permanent records. Post closure period will be a minimum of 5 years.

C7.14 OPEN BURNING

Open burning will not be used for solid waste disposal. Where burning is the method, authorized Spanish incinerators meeting air quality requirements in Chapter 2 will be used.

C7.15 SLUDGE DECLARATION

Installations that operate a domestic wastewater treatment plant will provide a report of the sludge treatment and disposal to the Spanish Base Commander. The report will include the following information:

- The type of wastewater treatment plant
- The method of sludge treatment (e.g., anerobic disgestion, composting, etc.)
- The final destination of the sludge (e.g., landfill, incineration, agricultural use, etc.)

The installation will provide the Spanish Base Commander with updated information whenever there is a change in their sludge treatment process or sludge disposal method/destination.

C7.16 COMPOSTING FACILITIES

A composting facility which is located on a DoD installation and which processes annually more than 5,000 tons of sludge from a domestic wastewater treatment plant (See Chapter 4), will comply with the following criteria:

C7.16.1 Operators must maintain a record of the characteristics of the waste composted, sewage sludge, and other materials (such as nutrient or bulking agents being composted) including the source and volume or weight of the material.

C7.16.2 Access to the facility must be controlled. All access points must be secured when the facility is not in operation.

C7.16.3 By-products, including residuals and materials that can be recycled, must be stored to

prevent vector intrusion and aesthetic degradation. Materials that are not composted must be removed periodically.

C7.16.4 Run-off water that has come in contact with composted waste, materials stored for composting, or residual waste must be diverted to a leachate collection and treatment system.

C7.16.5 The temperature and retention time for the material being composted must be monitored and recorded.

C7.16.6 Analysis of the compost must be completed for the following parameters: percentage of total solids, volatile solids as a percentage of total solids, pH, ammonia, nitrate nitrogen, total phosphorous, cadmium, chromium, copper, lead, mercury, nickel, zinc, and polychlorinated biphenyls.

If the compost is used for agricultural purposes (see C7.17.1), the sludge analysis must also include organic matter and total nitrogen. Analysis must be conducted at the end of the production process, every 6 months, and any time there is a major change in material composition. If no significant changes occur, or if the capacity of the wastewater treatment plant is <300 kg BOD_5/day, the analysis may be performed only once per year.

C7.16.7 Compost must be produced by a process to further reduce pathogens. Two such acceptable methods are:

- Wind-rowing, which consists of an unconfined composting process involving periodic aeration and mixing such that aerobic conditions are maintained during the composting process.
- The enclosed vessel method, which involves mechanical mixing of compost under controlled environmental conditions. The retention time in the vessel must be at least 72 hours with the temperature maintained at 55°C. A stabilization period of at least 7 days must follow the decomposition period.

C7.17 CLASSIFICATION & USE OF COMPOST FROM DOD COMPOSTING FACILITIES

Compost produced at a composting facility that is located on a DoD installation and that processes sludge from a domestic wastewater treatment plant (see Chapter 4) must meet the parameter limits in Table 7.1 at the end of the composting process.

C7.17.1 DoD installations will comply with the following requirements for compost used for agricultural purposes:

C7.17.1.1 Compost distributed for agricultural purposes must meet the requirements of Tables 7.1 and 7.2. Treated sludge will not be used for agricultural purposes under the following scenarios:

- In direct grazing areas less than 3 weeks before they are grazed
- With horticultural and fruit crops during the vegetative cycle (except for fruit trees), or less than 10 months before fruit collection and during collection

C7.17.1.2 Sludge analysis must be conducted at the end of the production process, every 6 months, and any time there is a major change in material composition. Parameters to be analyzed include organic matter, pH, total nitrogen, phosphorous, and heavy metals (cadmium, chromium, copper, lead, mercury, nickel, and zinc). If no significant changes occur, the sludge analysis may be reduced to at least once per year. If the capacity of the wastewater treatment plant is less than 300 kg BOD_5/day, the analysis may be performed only once per year.

C7.17.1.3 Soil analysis must be conducted at the frequency established by the competent authorities. Parameters that should be analyzed include (but are not limited to) pH and heavy metals (cadmium, chromium, copper, lead, mercury, nickel, and zinc). Analysis should be performed on composite soil samples obtained from 25 representative soil grab samples (at a depth of 25 cm below ground surface) for land areas ≤ 5 hectares.

C7.17.1.4 A log book must be maintained with the following information. The information in the log book must be presented to the Spanish Base Commander every 6 months. The Spanish Base Commander may submit the information to the competent authorities.

- The type of treatment applied to the sludge
- The sludge production
- The type of use (e.g., agricultural, gardening, forestry, etc.)
- The chemical properties of the sludge
- The municipality or land where the sludge was applied (name, total land area, and the frequency for soil monitoring)

C7.17.1.5 Sludge transported for agricultural use must be accompanied by a waste manifest issued by the operator of the sludge treatment plant, indicating the treatment method and composition characteristics of the sludge.

C7.17.2 Compost that fails to meet the standards in Table 7.1 must be disposed of in accordance with this chapter (i.e., by landfilling or incineration), or in accordance with Chapter 6 if the sludge is classified as a hazardous waste.

ADMINISTRATIVE ITEMS

1. If the approval for a new MSWLF unit is granted (by the Combatant Commander with responsibility for the area where the landfill would be located), the installation will submit a permit request and supporting information (including a design document and technical memorandum detailing the characteristics of the landfill) to the Spanish Base Commander to seek an operating permit for the facility. The Spanish Base Commander may submit the permit request to the competent regional authority.

2. Installations that use composted sludge for agricultural use will maintain a log book with the following information. The information in the log book must be presented to the Spanish Base Commander every 6 months. The Spanish Base Commander may submit the information to the competent authorities.

- The type of treatment applied to the sludge
- The sludge production
- The type of use (e.g., agricultural, gardening, forestry, etc.)
- The chemical properties of the sludge
- The municipality or land where the sludge was applied (name, total land area, and the frequency for soil monitoring)

3. Sludge transported for agricultural use must be accompanied by a waste manifest issued by the operator of the sludge treatment plant, indicating the treatment method and composition characteristics of the sludge.

4. Installations that operate a domestic wastewater treatment plant will provide a report of the sludge treatment and disposal to the Spanish Base Commander. The report will include the following information:

- The type of wastewater treatment plant
- The method of sludge treatment (e.g., anerobic disgestion, composting, etc.)
- The final destination of the sludge (e.g., landfill, incineration, agricultural use, etc.)

The installation will provide the Spanish Base Commander with updated information whenever there is a change in their sludge treatment process or sludge disposal method/destination.

Table 7.1 – Maximum Concentrations of Heavy Metals in Sludge after Composting

Parameter	Maximum Concentration in Sludge (mg/kg)
PCBs	1
Cadmium	10
Chromium	1,000
Copper	500
Lead	500
Mercury	5
Nickel	100
Zinc	1,000

Table 7.2 – Maximum Concentrations for Parameters in Soil if Sludge is Applied for Agriculture

Parameter	Maximum Concentration of Heavy Metals in Soils to Receive Sludge (mg/kg of dry soil)		Maximum Allowable Amount of Sludge Applied per Year (kg/Ha/year)
	Soils with pH< 7	Soils with pH>7	
Cadmium	1	3	3
Chromium	100	150	150
Copper	50	210	210
Lead	50	300	300
Mercury	1	1.5	1.5
Nickel	30	112	112
Zinc	150	450	450